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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/613,927	07/05/2003	Scott Contini	018926-011310US	4691

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EXAMINER	
DO, CHAT C	

ART UNIT	PAPER NUMBER
2193	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/26/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/613,927	CONTINI ET AL.	
	Examiner	Art Unit	
	Chat C. Do	2193	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 November 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *18-32* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *18-32* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This communication is responsive to Amendment filed 11/22/2006.

2. Claims 18-32 are pending in this application. Claims 18 and 31-32 are independent claims. In Amendment, claims 1-17 are cancelled. This Office Action is made final.

Claim Objections

3. Claims 18-20 are objected to because of the following informalities:

Re claim 18, the applicant is requested to write the acronym "FIR" in full at least once in the independent claim.

Re claim 19, it is missing a period or (.) at the end of the claim.

Re claim 20, the applicant is requested to write the acronym "PAVG" in full for clarification.

Other claims might have the same objection.

Appropriate correction is required.

Claim Rejections - 35 USC § 101

4. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

5. Claims 18-32 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Claims 18-32 cite a method, computer-readable medium, and apparatus for performing an average of operands according to a mathematical algorithm. In order for claims to be statutory, claims must either include a practical application or a discrete, useful, and tangible result. However, claims merely cite steps of performing average of two numbers and for used in another calculation as FIR calculation. The input is a set of number and the output is an average those numbers. The claims do not include either a practical application at useful end or a tangible result. In addition, the computer-readable medium is not tangible as clearly indicate in the specification page 50 paragraph 141. Therefore, claims 18-32 are directed to non-statutory subject matter.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 18-19, 21-29, and 31-32 are rejected under 35 U.S.C. 103(a) as being obvious over Dijkstra (U.S. 6,795,841) in view of Nagano et al. (U.S. 6,084,907).

Re claim 18, Dijkstra discloses in Figures 1-3 a method for using a single-instruction multiple-data (SIMD) instruction to perform a function (e.g. col. 1 lines 22-36 where in the function is averaging the input operands as seen in Figure 1), wherein the SIMD instruction uses M arguments, wherein the function uses N variables, wherein M and N are not the same (e.g. there are eight arguments a0-a3 and b0-b3 for the SIMD

instruction but each of function only uses two variables ai and bi for computation of averaging), the method comprising using the SIMD instruction on a plurality of packed values to obtain an approximate packed value result (e.g. Figure 1, abstract, and col. 2 lines 55-60); adjusting the approximate packed value result to obtain an adjusted packed value result, wherein the adjusted packed value result is in a predetermined relation to a desired exact result (e.g. Figures 1 and 3 as (a+b)/2 with the masking for computing the closed approximated result to the desired result as an exact result). Dijkstra fails to disclose the step of using the adjusted packed value result in an FIR calculation. However, Nagano et al. disclose in column 11 lines 30-55 and column 12 lines 58-63 that an average function is used in the FIR filter. Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention is made to apply and use the average function in the FIR filter as seen in Nagano et al. because it would enhance the FIR filter by reducing the error in updating coefficient (e.g. col. 11 lines 47-53 and col. 12 lines 59-63).

Re claim 19, Dijkstra further discloses in Figures 1-3 the SIMD instruction includes an averaging operation (e.g. Figures 1 and 3).

Re claim 21, Dijkstra further discloses in Figures 1-3 the predetermined relation to a desired exact result includes ensuring that the adjusted packed value result is no more than the desired exact result (e.g. Figure 3 with the second column wherein A and B are 5 and 13 respectively the result is 9 and col. 3 lines 19-22).

Re claim 22, Dijkstra further discloses in Figures 1-3 the predetermined relation to a desired exact result includes ensuring that the adjusted packed value result is no less

than the desired exact result (e.g. Figure 3 with the second column wherein A and B are 5 and 13 respectively the result is 9 and col. 3 lines 19-22).

Re claim 23, Dijkstra further discloses in Figures 1-3 the predetermined relation to a desired exact result includes ensuring that the adjusted packed value result is within a predetermined threshold of the desired exact result (e.g. mask(AEORB) col. 3 lines 19-22).

Re claim 24, Dijkstra further discloses in Figures 1-3 the predetermined relation to a desired exact result includes adjusting the adjusted packed value result to be closer to the desired exact result (e.g. Figure 3 by adding or subtracting the adjust factor as mask(AEORB)).

Re claim 25, Dijkstra further discloses in Figures 1-3 the step of adjusting the approximate packed value result includes a substep of adding the value 1 to the approximate packed value result (e.g. 38 as adding the result of mask(AEORB) in Figure 3 and first column wherein mask(AEORB) is 0001).

Re claim 26, Dijkstra further discloses in Figures 1-3 the substep of adding the value 1 further comprises using a saturated add (e.g. Figure 3).

Re claim 27, Dijkstra further discloses in Figures 1-3 the step of adjusting the approximate packed value result includes a substep of subtracting the value 2 from the approximate packed value result (e.g. 36 as subtracting the result of mask(AEORB) in Figure 3 and masking is placed in the second bit instead of 1).

Re claim 28, Dijkstra further discloses in Figures 1-3 determining a correct least significant bits of a desired exact result (e.g. AEORB in Figure 3).

Re claim 29, Dijkstra further discloses in Figures 1-3 determining an error amount for the approximate packed value result; and adjusting the approximate packed value result in accordance with the error amount (e.g. col. 2 lines 30-36 and mask(AEORB) in Figure 3).

Re claim 31, it is a computer-readable medium claim of claim 18. Thus, claim 31 is also rejected under the same rationale as cited in the rejection of rejected claim 18.

Re claim 32, it is an apparatus claim of claim 18. Thus, claim 32 is also rejected under the same rationale as cited in the rejection of rejected claim 18.

8. Claims 20 and 30 are rejected under 35 U.S.C. 103(a) as being obvious over Dijkstra (U.S. 6,795,841) in view of Nagano et al. (U.S. 6,084,907), as applied to claim 1 above, and further in view of the admitted prior art.

Re claim 20, Dijkstra in view of Nagano et al. do not disclose in Figures 1-3 the SIMD instruction includes a PAVG instruction. However, the admitted prior art discloses the PAVG instruction (e.g. page 4 lines 7-20). Therefore, it would have been obvious to a person in the art at the time the invention is made to add PAVG instruction as seen in the admitted prior at into Dijkstra in view of Nagano et al.'s invention because it would enable to produce the result efficiently (e.g. page 4 paragraph 16).

Re claim 30, Dijkstra in view of Nagano et al. in further view of the admitted prior art do not disclose in Figures 1-3 detecting when a PAVG operation would be applied to two same operands and, if so performing the step of omitting application of the PAVG operation and using one of the same operands values as the result of the PAVG

operation. However, the examiner takes an official notice that the step of detecting when a PAVG operation would be applied to two same operands and, if so performing the step of omitting application of the PAVG operation and using one of the same operands values as the result of the PAVG operation is obvious. Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention is made to add a step of detecting when a PAVG operation would be applied to two same operands and, if so performing the step of omitting application of the PAVG operation and using one of the same operands values as the result of the PAVG operation because it would enable to increase the system performance by reducing the step of computing the average.

Response to Arguments

9. Applicant's arguments filed 11/22/2006 have been fully considered but they are not persuasive.

a. The applicant argues in pages 6-7 for claims 18-32 that the claims involve obtaining an approximate packed value result which is then used to determine FIR filter operations. This is a practical application as required by interim guideline.

The examiner respectfully submits that all the claims only teach or disclose steps of performing calculation including step of using the result in FIR calculation. The last step of the claim is just another calculation as part of the filtering process. Using the intermediate result for another calculation cannot constitute as either practical application or tangible result. Thus, the claims do not produce any practical application or any tangible result.

b. The applicant argues in pages 8-9 for claims that the primary reference by Dijkstra teaches away from the use of SIMD instead of using SIMD in the cited invention.

The examiner respectfully submits that first the SIMD instruction is so well known in the technology of art for use in performing multiple data in a single instruction, as evidenced and provided in the recent attached reference. In addition, the cited reference by Dijkstra does not clearly state that the average calculation should not be performed or operated by the SIMD instruction, but rather Dijkstra addresses some advantages (e.g. col. 1 lines 20-35) and disadvantages (e.g. col. 1 lines 36-55) of having or using SIMD instruction.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chat C. Do whose telephone number is (571) 272-3721. The examiner can normally be reached on M => F from 7:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng-Ai An can be reached on (571) 272-3756. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Chat C. Do
Examiner
Art Unit 2193

January 18, 2007

Mary Steelman
Primary Examiner 01·22·2007